



Exercise 1 - Explore Data Sets & Models

Objective for Exercise 1:

- Find ready-to-use deep learning models on the Model Asset Exchange
- Locate resources that guide you through deployment in a local or cloud environment
- Explore the deep learning model-serving microservice API using your web browser
- Articulate how developers can consume those microservices

Objective for Exercise 2

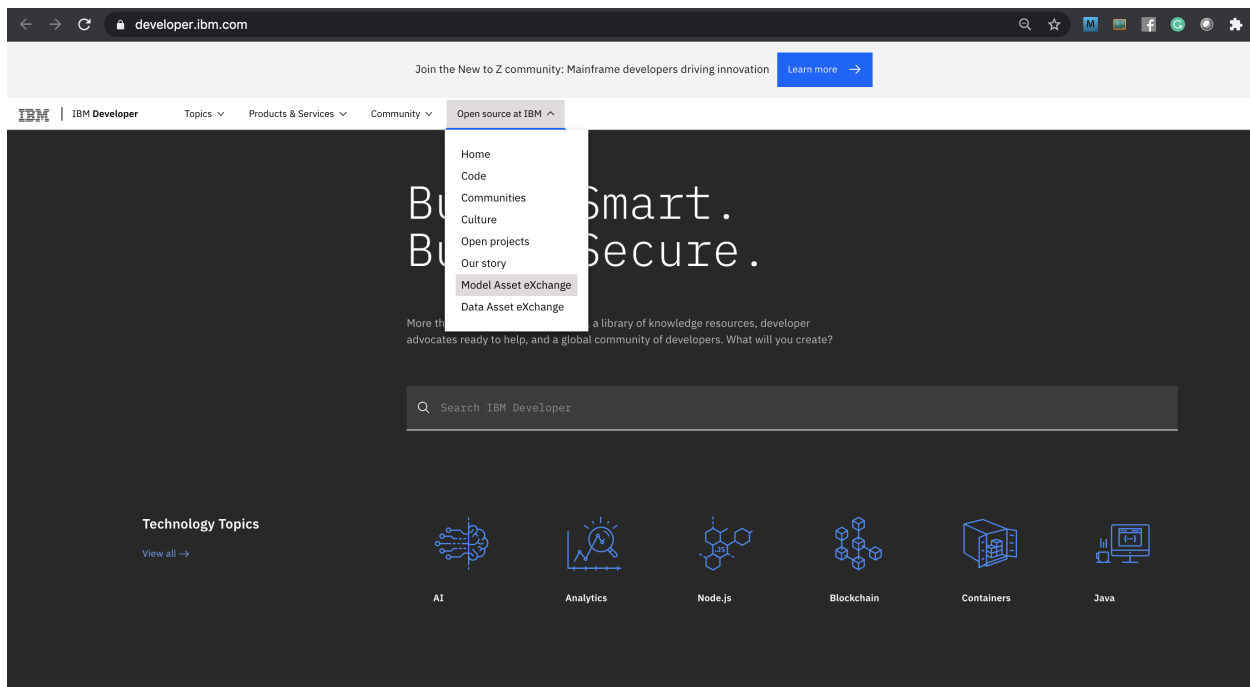
- Where to find open data sets on IBM Developer
- How to explore those data sets

It will take you approximately 30 minutes to complete the lab. Only a web browser is required to complete the tasks.

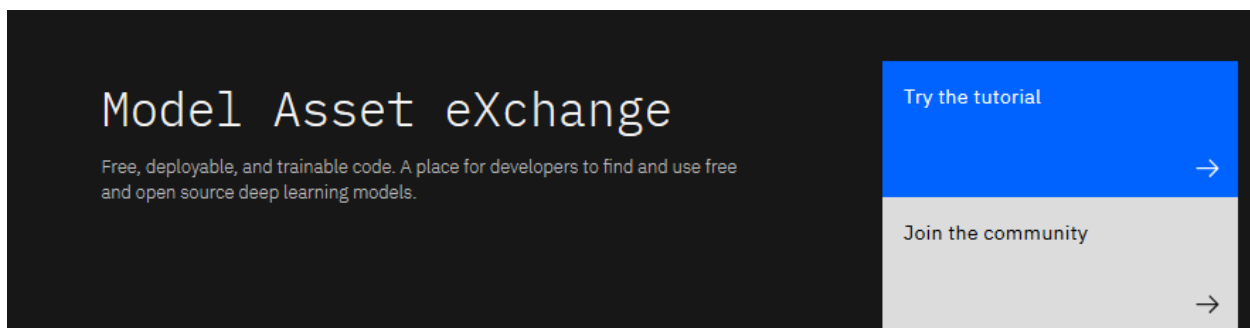
Exercise 1 - Explore deep learning models

The Model Asset Exchange is a curated repository of open source deep learning models for a variety of domains, such as text, image, audio, and video processing.

1. Open <https://developer.ibm.com/> in your web browser.
2. From the main menu select **“Open Source at IBM” > “Model Asset eXchange”**.

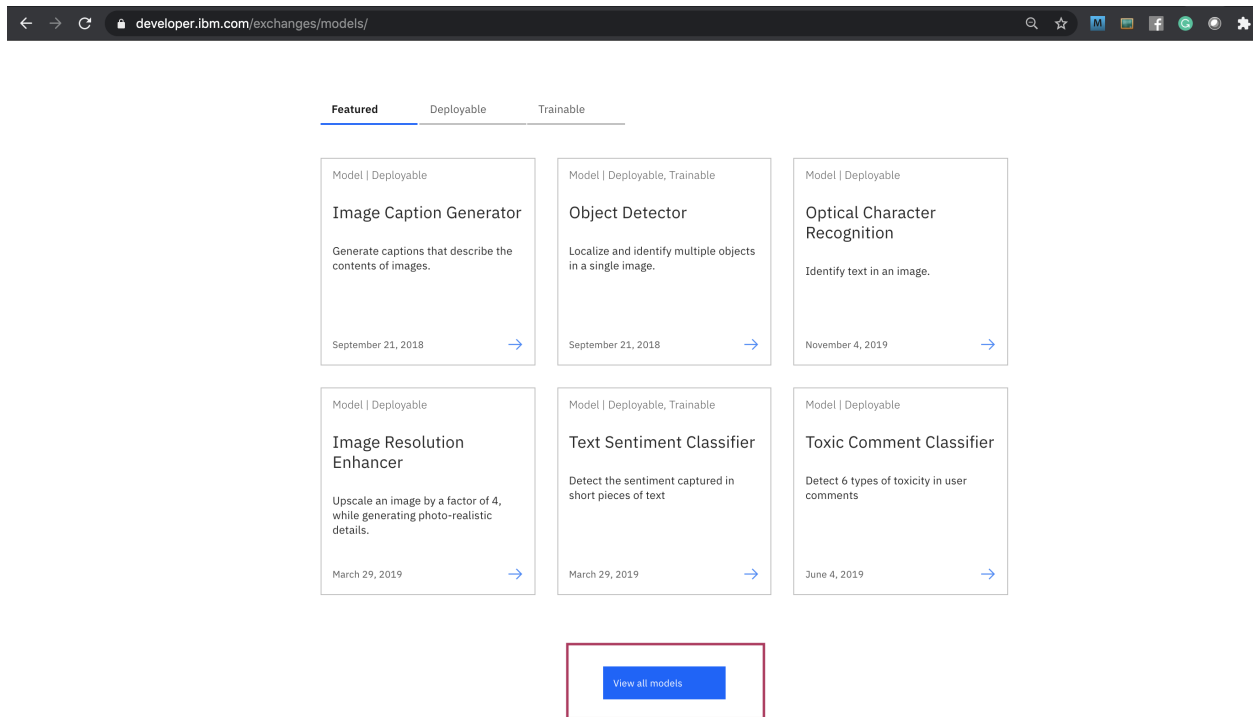


1. The MAX home page is displayed. *In this introductory lab exercise, we are going to focus on a few MAX key features. More detailed information is available in the Learning Path, which covers common deployment and consumption scenarios.*



Featured	Deployable	Trainable
<p>Model Deployable</p> <h3>Toxic Comment Classifier</h3> <p>Detect 6 types of toxicity in user comments</p> <p>Jun 04, 2019 →</p>	<p>Model Deployable, Trainable</p> <h3>Text Sentiment Classifier</h3> <p>Detect the sentiment captured in short pieces of text</p> <p>Mar 29, 2019 →</p>	<p>Model Deployable, Trainable</p> <h3>Image Segmenter</h3> <p>Identify objects in an image, additionally assigning each pixel of the image to a particular object.</p> <p>Sep 21, 2018 →</p>

1. Scroll down the page and click on **View all Models**.



A page with all the models is displayed.

Models

Open source deep learning models that contain free, deployable, and trainable code.

Model Type

- ☒ All Model types
- ☐ Trainable
- ☐ Deployable

Model Asset Technologies

- ☐ Audio Classification
- ☐ Audio Feature Extraction
- ☐ Audio Modeling
- ☐ Image Classification
- ☐ Image Feature Extraction
- ☐ Image-to-Image Translation or Transformation
- ☐ Image-to-Text Translation
- ☐ Language Modeling
- ☐ Named Entity Recognition
- ☐ Natural Language Processing
- ☐ Object Detection in Images
- ☐ Security
- ☐ Text Classification
- ☐ Text Feature Extraction
- ☐ Text-to-Image Translation
- ☐ Time Series Prediction
- ☐ Video Classification

Showing 1 - 12 of 28 results

Sort: Date Newest to Oldest

<p>Model Deployable</p> <p>Optical Character Recognition</p> <p>Identify text in an image.</p> <p>Nov 04, 2019</p>	<p>Model Deployable, Trainable</p> <p>Question Answering</p> <p>Answer questions on a given corpus of text</p> <p>Sep 17, 2019</p>	<p>Model Deployable</p> <p>Text Summarizer</p> <p>Generate a summarized description of a body of text</p> <p>Jul 09, 2019</p>
<p>Model Deployable</p> <p>Toxic Comment Classifier</p> <p>Detect 6 types of toxicity in user comments</p> <p>Jun 04, 2019</p>	<p>Model Deployable</p> <p>Chinese Phonetic Similarity Estimator</p> <p>Estimate the phonetic distance between Chinese words and get similar sounding candidate words.</p> <p>May 28, 2019</p>	<p>Model Deployable</p> <p>Image Resolution Enhancer</p> <p>Upscale an image by a factor of 4, while generating photo-realistic details.</p> <p>Mar 29, 2019</p>

1. Select **Object Detection in Images** from the *Model Asset Technologies* list on the left side.

Model Type

- ☒ All Model types
- ☐ Trainable
- ☐ Deployable

Model Asset Technologies

- ☒ Object Detection in Images
- ☐ Audio Classification
- ☐ Audio Feature Extraction
- ☐ Audio Modeling
- ☐ Image Classification
- ☐ Image Feature Extraction
- ☐ Image-to-Image Translation or Transformation
- ☐ Image-to-Text Translation
- ☐ Language Modeling

See more

Technologies

- ☐ Analytics
- ☐ API Management
- ☐ Artificial Intelligence
- ☐ Blockchain

Showing 1 - 4 of 4 results

Sort: Date Newest to Oldest

<p>Model Deployable</p> <p>Nucleus Segmenter</p> <p>Identify nuclei in a microscopy image and assign each pixel of the image to a particular nucleus</p> <p>March 28, 2019</p>	<p>Model Deployable</p> <p>Human Pose Estimator</p> <p>Detect humans in an image and estimate the pose for each person.</p> <p>December 12, 2018</p>	<p>Model Deployable, Trainable</p> <p>Image Segmenter</p> <p>Identify objects in an image, additionally assigning each pixel of the image to a particular object.</p> <p>September 21, 2018</p>
<p>Model Deployable, Trainable</p> <p>Object Detector</p> <p>Localize and identify multiple objects in a single image.</p> <p>September 21, 2018</p>		

1. Four models should be displayed: Nucleus Segmenter, Human Pose Estimator, Image Segmenter, and Object Detector. Select the **Object Detector** model.

Model | Deployable, Trainable

Object Detector

Localize and identify multiple objects in a single image.

Get this model

→

Try the API

→

Try the web app

→

Try in a Node-RED flow

→

By IBM Developer Staff

Updated September 21, 2018 | Published March 20, 2018

Facebook

Twitter

LinkedIn

WhatsApp

Reddit

Technologies (3)

Artificial intelligence

Deep learning

Visual recognition

Products & Services (3)

Model Asset Technologies (2)

Overview

This model recognizes the objects present in an image from the 80 different high-level classes of objects in the [COCO Dataset](#). The model consists of a deep convolutional net base model for image feature extraction, together with additional convolutional layers specialized for the task of object detection, that was trained on the COCO data set. The input to the model is an image, and the output is a list of estimated class probabilities for the objects detected in the image. The model is based on the [SSD Mobilenet V1 object detection model for TensorFlow](#).

On the model page you can learn about the underlying technology, read up on related research, and explore deployment and consumption options.

1. The model's source is published on GitHub and can be downloaded and modified if desired. Click "Get this model" to open the repository in a new browser tab (or window) and view the files. You can use this once you are comfortable deploying models.

Model | Deployable, Trainable

Object Detector

Localize and identify multiple objects in a single image.

Get this model

→

Try the API

→

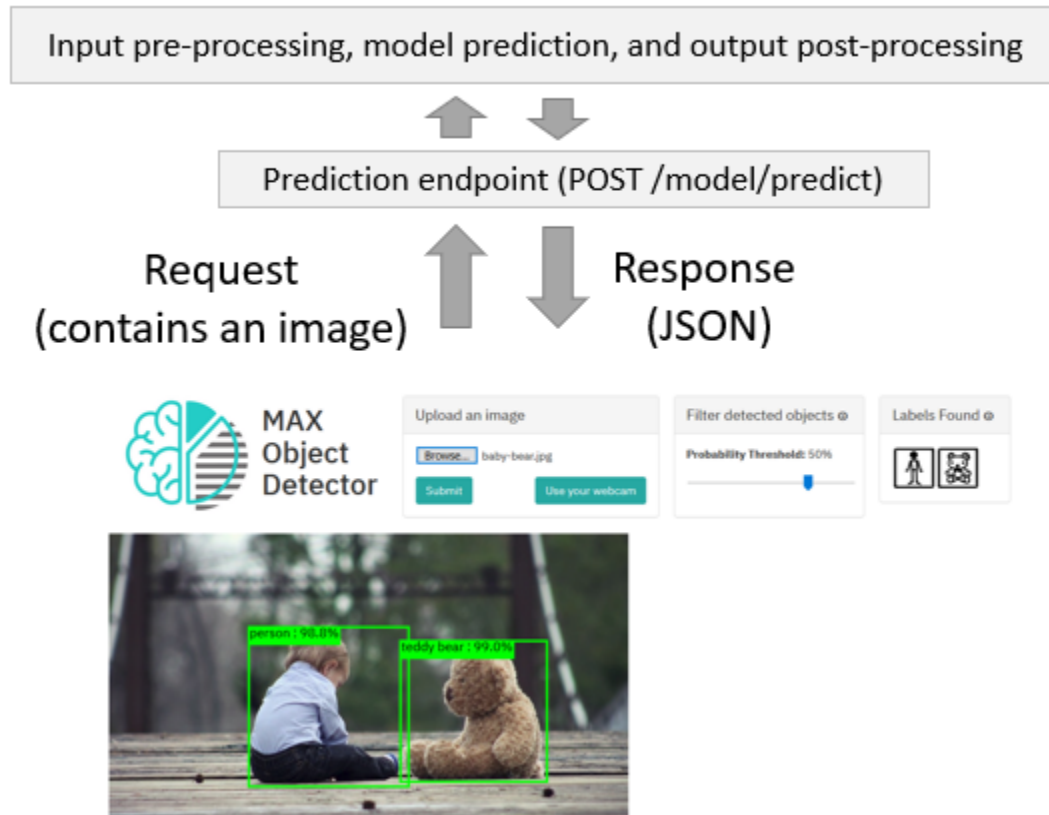


1. Close the GitHub window or tab

- On the Object Detector page (<https://developer.ibm.com/exchanges/models/all/max-object-detector/>) on top right, choose **Try the web app**.



The demo web application uploads an image (or takes a picture using the web cam), sends a request to an Object Detector microservice and visualizes the response by drawing bounding boxes around detected objects and attaching a label.



Upload an image (or take a picture using the web camera) and inspect the visualized results.

1. Change the filter conditions (e.g. lower the probability threshold) and observe how they impact the visualized results. Note the web application caches the response and applies the filter on the cached data. This was done for two reasons:
 - It eliminates the need to re-process the image using the deep learning microservice (which significantly lowers the application's response time)
 - It illustrates how client-side filtering can be applied to the results if the prediction endpoint doesn't support filtering by the desired criteria.

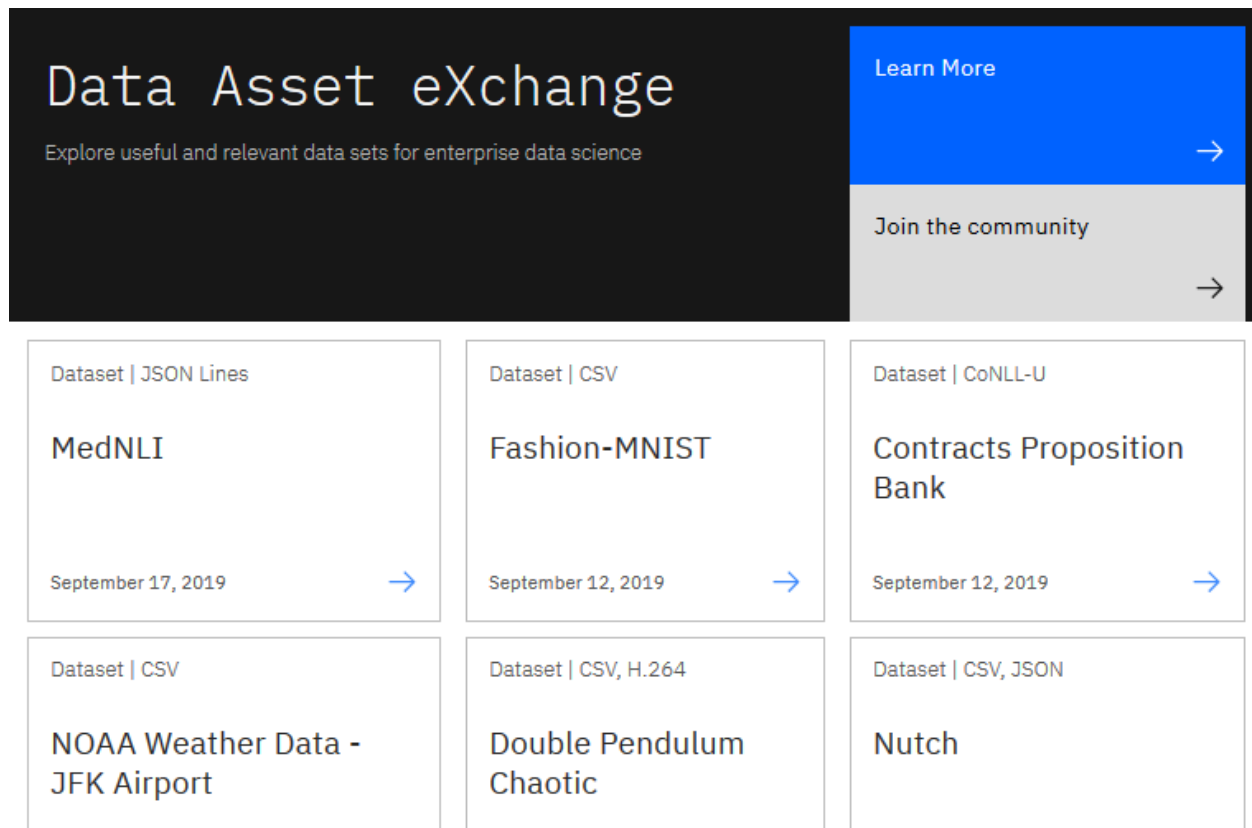
If you are interested in learning more about how the application was implemented, take a look at the code pattern: <https://developer.ibm.com/patterns/create-a-web-app-to-interact-with-objects-detected-using-machine-learning/>

This concludes Exercise 1 of this lab, which introduced the Model Asset Exchange.

Exercise 2: Explore deep learning datasets

The Data Asset Exchange is a curated collection of open datasets from IBM Research and 3rd parties that you can use to train models.

1. Open <https://developer.ibm.com/> in your web browser.
2. From the main menu select "Open Source at IBM" > "Data Asset eXchange". The DAX homepage is displayed.



The collection includes datasets from the Debater project (<https://www.research.ibm.com/artificial-intelligence/project-debater/>), datasets that can be used to train models to perform document layout analysis, natural language processing, time series analysis and more.

1. Open the NOAA Weather Data dataset (<https://developer.ibm.com/exchanges/data/all/jfk-weather-data/>), which contains data from a weather station at the John F. Kennedy Airport in New York spanning 8 years. This dataset was used to train the weather forecaster model on MAX (<https://developer.ibm.com/exchanges/models/all/max-weather-forecaster/>).

CDLA-Sharing | CSV

NOAA Weather Data – JFK Airport

Local climatological data originally collected by JFK airport.

Get this dataset →

Explore in Watson Studio →

By NOAA

Updated September 12, 2019 | Published July 16, 2019

Technologies (1) ^

Artificial intelligence

Products & Services (1) v

Data Asset Technologies (2) ^

Time Series Weather

Table of Contents ^

Overview

Dataset Metadata

Example Records

Related Links

Example Records

Related Links

Overview

The NOAA JFK dataset contains 114,546 hourly observations of various local climatological variables (such as visibility, temperature, and wind speed). The data was collected by a NOAA weather station located at the John F. Kennedy International Airport in Queens, New York and the observations span the date range of 2010-01-01 through 2018-07-27.

This data archive contains two versions of the weather data. A raw version obtained directly from NOAA is included (`jfk_weather.csv`) which contains hourly observations along with daily and monthly summaries. The raw version also includes many non-numeric variables such as weather type and sky conditions. To obtain a different date range of this data, or to download weather data for a new geological location, you may visit the NOAA Local Climatological Data platform linked below.

A cleaned version of this dataset (`jfk_weather_cleaned.csv`) is also included in this archive. The intention for including this version of the NOAA data is to make it easier to use the weather data for modeling using machine learning. This version of the data is also what was

You can download the dataset using the “Get this dataset” link. Datasets are stored as compressed archives, which you can extract using any utility that supports the tar.gz format. If you are not familiar with this file format take a look at this short open source tutorial <https://opensource.com/article/17/7/how-unzip-targz-file>.

1. Inspect the dataset’s metadata.

This dataset is stored as tabular data and formatted as a comma separated value (CSV) file, which is a very popular basic data exchange format. The dataset was published under the data science friendly CDLA-Sharing license (<https://cdla.io/>). The dataset contains time-series data and can be used to predict weather trends. 5. Most datasets are complemented by Python notebooks that you can use to explore, pre-process, and analyze the data. You can access the notebook (or notebooks) by clicking the “Explore in Watson Studio” or “Try the notebook” link:

CDLA-Sharing | CSV

NOAA Weather Data – JFK Airport

Local climatological data originally collected by JFK airport.

Get this dataset →

Explore in Watson Studio →

The notebooks are hosted on Watson Studio, IBM's Data Science platform. Later in this course you'll learn more about Watson Studio, notebooks and how to run them.

1. [Optional] If you are already familiar with notebooks and Watson Studio feel free to open the link and import the project or notebook. The example below depicts the weather dataset project assets, which include the raw data file and two notebooks.

OverviewAssetsEnvironmentsJobsDeploymentsAccess ControlSettings

What assets are you looking for?

▼ Data assets





New data asset +

0 assets selected.

<input type="checkbox"/>	NAME	TYPE	CREATED BY	LAST MODIFIED ▼	ACTIONS
<input type="checkbox"/>	CSV jfk_weather.csv	Data Asset		14 Feb 2020, 4:14:29 pm	

▼ Notebooks

New notebook +

NAME 	SHARED	SCHEDULED	STATUS	LANGUAGE	LAST EDITOR	LAST MODIFIED	ACTIONS
 Part 1 - Data Cleaning					Unknown	14 Feb 2020	
 Part 2 - Data Analysis					Unknown	14 Feb 2020	